Effective Health Care

Effectiveness of Mechanical Devices to Prevent Deep Venous Thrombosis (DVT) in Hospitalized Patients Nomination Summary Document

Results of Topic Selection Process & Next Steps

- The topic, *Effectiveness of mechanical devices to prevent deep venous thrombosis (DVT) in hospitalized patients* is not feasible for a full systematic review due to the limited data available for a review at this time.

Topic Description

Nominator(s): Individual

Nomination Summary: The nominator asserts that the use of mechanical devices to prevent deep vein thrombosis (DVT) among hospitalized patients varies between providers and that the effectiveness of such devices alone or in combination is unclear. The nominator is concerned that the use of intermittent compression with sequential compression devices (SCDs) in addition to continual compression by a thromboembolism-deterrent stocking (TED stocking) may not provide additional protection from DVT. Specifically the nominator is concerned that concurrent use of (TED) stockings and SCDs may work against each other. The nominator, however, observes that both methods are frequently used in combination in clinical practice. The nominator seeks evidence for the use of SCD with TED stockings for the prevention of DVT. The nominator does not mention other prophylactic methods, such as anticoagulation medications or early postsurgical mobilization.

Staff-Generated PICO
Population(s): Hospitalized patients at risk for lower-limb DVT
Intervention(s): Use of TED and SCD
Comparator(s): TED alone or usual care or
Outcome(s): Reduction in the incidence of lower-limb DVT, venous thromboembolism (VTE)/ or their complications, including mortality

Key Questions from Nominator: Does the use of SCD and TED hose simultaneously decrease or eliminate the effectiveness of the other?

Considerations

- The topic meets EHC Program appropriateness and importance criteria. (For more information, see http://effectivehealthcare.ahrq.gov/index.cfm/submit-a-suggestion-for-research/how-are-research-topics-chosen/.)
- Deep vein thrombosis (DVT) is a blood clot that forms, generally, in a large vein of the leg and can extend to the pelvis or abdomen. Pulmonary embolism (PE) occurs when a DVT breaks free and enters the arteries of the lungs through the heart. DVT and PE comprise venous thromboembolism (VTE). VTE is most common in adults over age 60, but can occur at any age. Risk factors for DVT include bed rest, family history, fractures of the pelvis or legs, pregnancy and delivery, obesity, recent surgery or sitting for extended periods of time. These risk factors are commonly associated with hospitalization and therefore, hospitalized patients are at particular high risk for the development of VTE.
- A variety of prophylactic methods exist to prevent VTE, including pharmacological interventions (anticoagulation drugs) and external mechanical methods, including sequential compression devices (SCD) and thromboembolism-deterrent (TED) stockings. SCDs and similar devices employ intermittent pneumatic compression to the legs to promote blood flow within the veins of the extremities. TED or compression stockings also compress the extremities to prevent blood stagnation in the veins, but, unlike SCD, this compression is continuous.
- Limited research specifically addressing the comparative effectiveness of mechanical interventions without concurrent pharmacological interventions.
- Only one study identified in our scan of the literature specifically addressed the nominator's question regarding the concurrent use of TED and SCD. This study found that the simultaneous use of graduated compression stockings and intermittent pneumatic compression boots did not produce a synergistic prophylactic effect.
    - Keith SL, McLaughlin DJ, Anderson FA Jr, et al. Do graduated compression stockings and pneumatic boots have an additive effect on the peak velocity of venous blood flow? Arch Surg. 1992; 127: 727-730.

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